# A Topic Approval Proposal
# of

# A study on critical success factors of Last Mile Delivery practices of E-commerce players in Maharashtra

**For**
**Doctor of Philosophy in**
**Management Studies**

**Submitted by**
**Hirendra Mohanlal Soni**
**PET-2022 and Login ID: MUPET22-3057**

**Under the Guidance of**
**Dr. Sandeep Bhanot**

**Centre:**
**SIES College of Management Studies**
**Sri Chandrasekharendra Saraswati Vidyapuram,**
**Nerul, Navi Mumbai**

**Submitted to**
**University of Mumbai**

_____ _____

Signature of Guide Signature of Student

# Table of Contents


| Sr. No | Content | Page No. |
|---|---|---|
| 1 | Research Topic | 1 |
| 2 | Introduction and Background | 1 |
| 3 | Need for Research | 1 |
| 4 | Scope of the Study | 2 |
| 5 | Literature Review | 2 |
| 6 | Research Gap | 5 |
| 7 | Research Question | 5 |
| 8 | Research Objectives | 5 |
| 9 | Hypotheses of the Study | 6 |
| 10 | Research Methodology | 6 |
| 11 | Scope / Limitations | 7 |
| 12 | Study Contribution | 7 |
| 13 | Bibliography & References | 8 |

# A study on critical success factors of Last Mile Delivery practices of E-commerce players in Maharashtra

## Introduction and background of the study

Since the last few years, one of the differentiating factors for the e-commerce and omni channel retailers has been the delivery promptness. This didn't stop even after *same day delivery*, instead has gone to a level where in *two-hour delivery promises* have also started coming up. This trend has brought in a lot of stress and performance pressure on the logistics industry as well as the last mile delivery partners. These changes in the customer expectations have led to the evolution of more optimised business models including *inventory based fulfilment centres* and *market place strategies*. These changing customer preferences have created a need for faster and flexible services at the lowest possible cost. The requirement for *complex and more integrated warehousing and distribution services* has become the need of an hour. To counter the increasing expectations of the omni channel retailers and e-commerce companies and their customers, logistics companies are exploring newer models such as relay, drop-shipping, aggregation, drone delivery and hyper-local delivery. Technological innovations are playing the key role of an enabler while facilitating timely delivery, enhanced visibility across the supply chain and the flexibility required in terms of last-minute changes in the transaction scenarios.

The above-mentioned challenges make the study more interesting and challenging too.

## Need for Research

According to Straits research report (2022), the global last mile delivery market size was valued at USD 40.5 Billion in 2021 and is anticipated to generate USD 123.7 Billion in 2030. The market is expected to grow with a CAGR of 13.21% during 2022-2030 (Straits Research, 2022). The global last mile delivery market share comprises of B2B, B2C and C2C product types with B2B amounting to USD 25973.3 million in 2021 with an expected valuation of USD 82484.30 million at CAGR growth rate of 13.7% (Straits Research, 2022). The last mile delivery further comprises of manufacturing companies, retail and e-commerce clients. The retail and the e-commerce players are the most dominant players in it.

Last mile delivery comprises of approximately *43% of the total transportation cost*. It is directly proportional to the retail and e-commerce market. It is the most challenging part of the entire logistics network because of the non-availability of the clear and precise addresses and poor connectivity. A lot of local players have evolved in this sector because of the opportunity available in it. Because of their better awareness of the local areas, they are able to perform better as compared to big players. Big delivery giants are also tying up with them for their last mile services.

## Scope of the Study

The study will focus upon the last mile delivery challenges being faced by the service providers and service expectations of the customers. The study will focus on collecting responses six administrative divisions of Maharashtra namely Amravati, Aurangabad, Konkan, Nagpur, Nashik and Pune within Maharashtra.

## Literature Review

1. According to a McKinsey report (2016) titled "How customer demands are reshaping last-mile delivery" published in 2016, a large share of consumers are willing to pay extra for same day or instant delivery (McKinsey & Company, 2016).
2. The delivery mode, velocity, time slot are variables that are parts of Marchet et al. (2018) framework and describes several logistics variables that represent retailers. Another variable that is described is delivery fee. These variables are of interest to observe how retailers stay competitive when it comes to the last mile delivery (Marchet, Melacini, Perotti, Rasini, & Tappia, 2018).
3. Gayani Bopage (2019) has focused the study on last mile delivery of B2C merchandise. The study was covered in three parts namely, i) Last mile delivery, ii) Behavioral patterns of key parties engaged in Last mile delivery and iii) Factors affecting for the performance of last mile delivery (Bopage, Nanayakkara, & Vidanagamachchi, 2019).

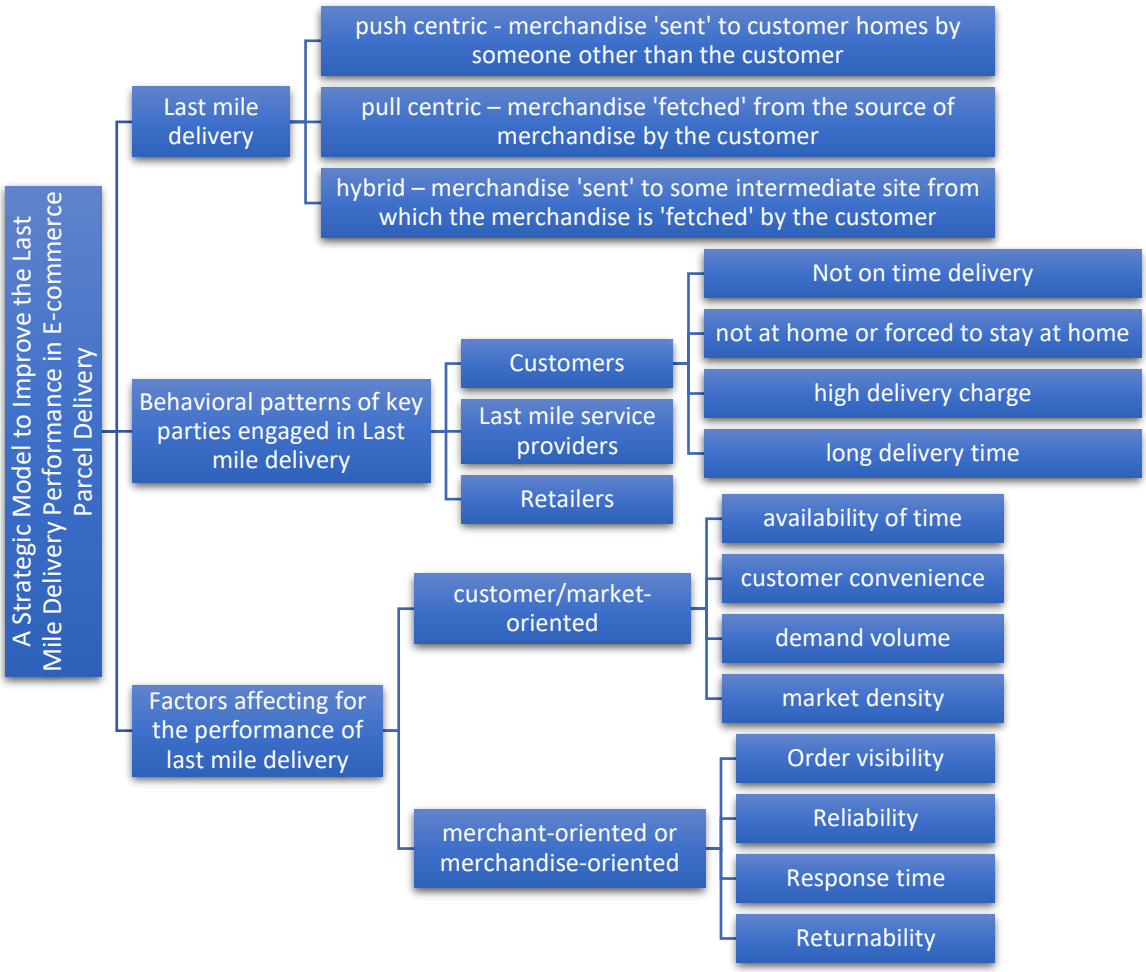
A Strategic Model to Improve the Last Mile Delivery Performance in E-commerce Parcel Delivery
Last mile delivery
push centric - merchandise 'sent' to customer homes by someone other than the customer
pull centric – merchandise 'fetched' from the source of merchandise by the customer
hybrid – merchandise 'sent' to some intermediate site from which the merchandise is 'fetched' by the customer
Behavioral patterns of key parties engaged in Last mile delivery
Customers
Last mile service providers
Retailers
Not on time delivery
not at home or forced to stay at home
high delivery charge
long delivery time
Factors affecting for the performance of last mile delivery
customer/market-oriented
availability of time
customer convenience
demand volume
market density
merchant-oriented or merchandise-oriented
Order visibility
Reliability
Response time
Returnability

*Figure 1: Factors considered for the study*

The above figure summarises the factors considered for the study. delivery convenience, speed of delivery and delivery reliability were considered for studying consumer satisfaction. The study also throws light on the three last mile delivery models: (i) attended home delivery (AHD), (ii) reception box (RB) and (iii) collection-and-delivery points (CDPs). Factors like delivery mode, time, area and returns were used to study retailer behaviour. (Bopage, Nanayakkara, & Vidanagamachchi, 2019)

4. Factors affecting the last mile delivery efficiency was observed as (i) lack of economies of scale: one package per drop, (ii) locating specific home address of the consumer, and (iii) Not-at-home problem resulting into failed and empty trips. (Bopage, Nanayakkara, & Vidanagamachchi, 2019)

5. M. Sugana has identified the major factors influencing the last mile delivery during COVID as Customers' expectations, Health, Delivery density, Cost of last mile delivery, Types of goods, Achieving routing efficiency, Infrastructure, Issues from customers' side, Unpredictability in transit, and Meeting fulfilment timeline. (M, Shah, S, & M, 2021)
6. Christian Tilk in his research article titled "The last-mile vehicle routing problem with delivery options" has introduced and analysed the vehicle routing problem with delivery options (VRPDO) with requests being shipped to alternative locations requiring different delivery time windows and delivery options. The solution suggested is based on new branch-price-and-cut algorithm. (Tilk, Olkis, & Irnich, 2021)
7. Yezekael Hayel has proposed a queuing model for two last-mile delivery services for competing consumers. This work was derived from a real-world e-commerce application. The article was used to prove the existence and uniqueness of congestion/routing games: Wardrop and Logit equilibria. They compared them using the Price of Rationality and Anarchy. The study was focused at home delivery and customers pickup services. (Hayel, Quadri, Jiménez, & Brotcorne, 2016)
8. Antonio Martinez-Sykora presents an optimisation model that integrates driving and walking element while describing a branch-and-cut algorithm for the last mile delivery. The study was conducted in London. (Sykora, McLeod, Fernandez, & Bektas, 2020)
9. Gayani Bopage in his paper titled "A Strategic Model to Improve the Last Mile Delivery Performance in E-commerce Parcel Delivery" focuses on eliminating the inefficiencies in last mile delivery by identifying the factors important for its stake holders. The article suggests a model that can be used by the last mile logistics service providers during strategy implementation to meet customer and retailer expectations while managing service costs. (Bopage, Nanayakkara, & Vidanagamachchi, A Strategic Model to Improve the Last Mile Delivery Performance in E-commerce Parcel Delivery, 2019)
10. John Olsson in his research paper titled "Framework of Last Mile Logistics Research: A Systematic Review of the Literature" reviewed 155 peer reviewed journal publications addressing last mile delivery emerging trends, practices, performance optimisation and policy formulation, supply chain structures and performance measurement. The paper provides a good back ground study base. (Olsson, Hellström, & Pålsson, 2019)

## Research gap:

Similar studies have been conducted in US and European countries but studies pertaining to Indian states is not visible. As India is very different as compared to US and Europe in terms of its economy, demographics, infrastructural support and may other factors, the study will be very interesting and will help in approaching the last mile delivery challenges more scientifically.

## Research Question

RQ1: What are the most and least popular last mile delivery practices adopted by e-tailers' in Maharashtra?

RQ2: What are the differences and similarities between the last mile delivery practices adopted?

RQ3: What are the factors which define the selection and success of last mile delivery practices in Maharashtra.

## Research Objectives

The objective of this study is

Primary Objective:

1. To study critical success factors of last mile delivery practices of e-commerce players in Maharashtra

Secondary Objectives:

1. To investigate the last mile delivery practices in Maharashtra.
2. To investigate the last mile delivery practices adoption factors in Maharashtra
3. To investigate the factors responsible for change in the last mile delivery practices
4. To investigate the factors on the consumers side where early delivery is preferred over normal delivery.

5. To investigate consumer preference for early delivery and their willingness to pay extra for the same
6. To suggest a suitable model for effective last mile delivery practice for e-commerce players in Maharashtra

## Hypotheses of the Study

Tentative Hypothesis of the study:

**H1:** Customers perceive the issue of inconvenient delivery times (during the day on working days) as a problem regarding home delivery.

**H2:** Customers prefer the kind of last mile delivery method which has the lowest additional costs.

**H3:** Customers prefer free delivery as compared to orders with delivery charges.

**H4:** Customers have different preferences of delivery methods.

**H5:** Customers perceive long delivery times as the greatest barriers for home delivery.

## Research Methodology

The study will be a combination of primary as well as secondary research.

1. Part 1 of the study
   Consumer preferences will be studied using a ***structured questionnaire***.
2. Part 2 of the study
   ***Descriptive research*** will be conducted to understand Last mile delivery practices adopted by the ***company executives*** of the ***last mile delivery service providers***.
3. ***Sample profile*** of respondents
   - E-Commerce consumers:
     - Across all age groups
     - Includes both the genders (male and female)
     - ***Online shoppers*** using smart devices, tablets and/or personal computers.

- Last mile delivery executives:
    - Age: 25-35
    - Gender: Male or female
    - Education: High school diploma or equivalent
    - Experience: 1+ year of experience in delivery or customer service
    - Language skills: Local language and basic English proficiency is required.
- ***Managers / Supervisors*** of last mile delivery executives
    - Education: Bachelors or equivalent degree
    - Experience: 3+ years in a supervisory or management role in a delivery or logistics role
    - Responsibilities include:
        - Day to day operations planning and management
        - Hire, train, and develop employees
        - Assign and track employee workloads
        - Monitor employee performance and provide feedback
        - Resolve customer issues
        - Ensure that all deliveries are made on time and in full

4. ***Sampling method/ Technique***

   For part 1, it will be ***stratified random sampling***.

   For part2, it will be ***non probability judgemental convenience sampling***

5. ***Sample size***

   For part 1, the sample size will be at least ***500 customers*** of e-commerce companies.

   For part 2, the sample size will be approximately ***100 executives*** and around ***50 supervisors*** of the last mile delivery service providers.

6. ***Tools*** to be used

   Responses collection: ***Structured questionnaire*** will be used for response collection

   Analysis: ***Microsoft Excel, SPSS, R and Python*** will be used based on their suitability and effectiveness of results.

## Scope/ Limitations

Data will be collected from Maharashtra state only and hence findings cannot be generalised in terms of applicability across the country.

The study depends upon the existing technology and consumer preferences. These may change in the future and hence the study may have to be conducted again.

## Study Contribution

The study will contribute to the development of theoretical model in the last mile delivery phase of the logistics and supply chain management domain in Indian context.

It will also provide a way forward for the development of optimised last mile delivery models.

The study is further expected to provide Cost optimization and Work pressure relaxation of the last mile delivery personnels.

Customers will be benefitted with better and cost effective services.

## Tentative chapterisation

Chapter 1: Introduction

Chapter 2: Literature Review

Chapter 3: Need of the Research/Problem Statement

Chapter 4: Research Methodology

Chapter 5: Data Collection

Chapter 6: Analysis of data

Chapter 7: Discussion on the analysis

Chapter 8: Conclusions and suggestions

Chapter 9: Limitations and Future Scope of Research

## Bibliography & References


1. Allied Market Research. (2022). *Last Mile Delivery market.* Allied Market Research. Retrieved from https://www.alliedmarketresearch.com/last-mile-delivery-market

2. Bopage, G., Nanayakkara, J., & Vidanagamachchi, K. (2019). A Strategic Model to Improve the Last Mile Delivery Performance in Ecommerce Parcel Delivery. *International Conference on Industrial Engineering and Operations Management.* Bangkok, Thailand.

3. Bopage, G., Nanayakkara, J., & Vidanagamachchi, K. (2019). A Strategic Model to Improve the Last Mile Delivery Performance in E-commerce Parcel Delivery. *International Conference on Industrial Engineering and Operations Management.* Bangkok, Thailand: IEOM Society International.

4. Hayel, Y., Quadri, D., Jiménez, T., & Brotcorne, L. (2016). Decentralized optimization of last-mile delivery services with non-cooperative bounded rational customers. *Annals of Operations Research*, 451–469. doi:10.1007/s10479-014-1647-x

5. Indian Transport & Logistics News. (2022, July 18). *India's last-mile growth spurt to scale new heights*. Retrieved December 15, 2022, from itln.in: https://www.itln.in/logistics/indias-last-mile-growth-spurt-to-scale-new-heights-1345966?infinitescroll=1

6. M, S., Shah, B., S, K., & M, S. (2021, September 13). A study on the influential factors of the last mile delivery projects during Covid-19 era. *Operations Management Research*, pp. 399–412. doi:https://doi.org/10.1007/s12063-021-00214-y

7. Marchet, G., Melacini, M., Perotti, S., Rasini, M., & Tappia, E. (2018). Business logistics models in omni-channel: a classification framework and empirical analysis. *International Journal of Physical Distribution & Logistics Management, 48*(4), 439-464. doi:https://doi.org/10.1108/IJPDLM-09-2016-0273

8. McKinsey & Company. (2016). *How customer demands are reshaping last-mile delivery.* McKinsey & Company. Retrieved December 15, 2022, from https://www.mckinsey.com/~/media/mckinsey/industries/travel%20logistics%20and%20infrastructure/our%20insights/how%20customer%20demands%20are%20reshapi

ng%20last%20mile%20delivery/how-customer-demands-are-reshaping-last-mile-delivery.pdf

9. Olsson, J., Hellström, D., & Pålsson, H. (2019). Framework of Last Mile Logistics Research: A Systematic Review of the Literature. *Sustainability*. doi:10.3390/su11247131

10. Straits Research. (2022). *Last Mile Delivery Market.* Straits Research. Retrieved December 15, 2022, from https://straitsresearch.com/report/last-mile-delivery-market

11. Sykora, A. M., McLeod, F., Fernandez, C. L., & Bektas, T. (2020). Optimised solutions to the last-mile delivery problem in London using a combination of walking and driving. *Annals of Operations Research*, 645–693. doi:10.1007/s10479-020-03781-8

12. Tilk, C., Olkis, K., & Irnich, S. (2021). The last-mile vehicle routing problem with delivery options. *OR Spectrum, 43*, 877–904. doi:10.1007/s00291-021-00633-0